

WHAT IS CLAIMED IS:

1. A phase-change optical recording medium which comprises a substrate and formed thereon a multilayered film comprising a protective layer and a recording layer and in which information is recorded/erased based on reversible phase changes in the recording layer between a crystalline phase and an amorphous phase, wherein the protective layer comprises an oxide of tantalum and at least one carbide, the content of the carbide in the protective layer is from 1 to 40 mol%, and the protective layer is in contact with the recording layer.

2. The phase-change optical recording medium of claim 1, wherein the protective layer contains one or more carbides selected from the group consisting of carbides of silicon, titanium, tantalum, and niobium.

3. The phase-change optical recording medium of claim 2, wherein the recording layer comprises an alloy of germanium, antimony and tellurium, or a material containing the alloy as the main component.

4. The phase-change optical recording medium of claim 3, which is used under the conditions of $d/v < 1.5 \times 10^{-7}$ [s], wherein d is the laser beam diameter as measured on the recording layer ($d = \lambda/NA$, wherein λ is the wavelength of the laser light and NA is the numerical aperture of the objective lens) and v is the linear velocity.

5. A phase-change optical recording medium which comprises a substrate and formed thereon a multilayered film

comprising a protective layer and a recording layer and in which information is recorded/erased based on reversible phase changes in the recording layer between a crystalline phase and an amorphous phase, wherein the protective layer comprises an oxide of aluminum and at least one carbide, the content of the carbide in the protective layer is from 1 to 40 mol%, and the protective layer is in contact with the recording layer.

6. The phase-change optical recording medium of claim 5, wherein the protective layer contains one or more carbides selected from the group consisting of carbides of silicon, titanium, tantalum, and niobium.

7. The phase-change optical recording medium of claim 6, wherein the recording layer comprises an alloy of germanium, antimony and tellurium, or a material containing the alloy as the main component.

8. The phase-change optical recording medium of claim 7, which is used under the conditions of $d/v < 1.5 \times 10^{-7}$ [s], wherein d is the laser beam diameter as measured on the recording layer ($d = \lambda/NA$, wherein λ is the wavelength of the laser light and NA is the numerical aperture of the objective lens) and v is the linear velocity.

9. A phase-change optical recording medium which comprises a substrate and formed thereon a multilayered film comprising a protective layer and a recording layer and in which information is recorded/erased based on reversible phase changes in the recording layer between a crystalline phase

and an amorphous phase, wherein the protective layer comprises an oxide of tantalum, at least one carbide, and one or more oxides of one or more elements selected from the group consisting of indium, silicon, titanium, hafnium, and zirconium, the content of the carbide in the protective layer is from 1 to 40 mol%, and the protective layer is in contact with the recording layer.

10. The phase-change optical recording medium of claim 9, wherein the protective layer contains one or more carbides selected from the group consisting of carbides of silicon, titanium, tantalum, and niobium.

11. The phase-change optical recording medium of claim 10, wherein the recording layer comprises an alloy of germanium, antimony and tellurium, or a material containing the alloy as the main component.

12. The phase-change optical recording medium of claim 11, which is used under the conditions of $d/v < 1.5 \times 10^{-7}$ [s], wherein d is the laser beam diameter as measured on the recording layer ($d = \lambda/NA$, wherein λ is the wavelength of the laser light and NA is the numerical aperture of the objective lens) and v is the linear velocity.

13. A phase-change optical recording medium which comprises a substrate and formed thereon a multilayered film comprising a protective layer and a recording layer and in which information is recorded/erased based on reversible phase changes in the recording layer between a crystalline phase and an amorphous phase, wherein the protective layer comprises

an oxide of aluminum, at least one carbide, and one or more oxides of one or more elements selected from the group consisting of indium, silicon, titanium, hafnium, and zirconium, the content of the carbide in the protective layer is from 1 to 40 mol%, and the protective layer is in contact with the recording layer.

14. The phase-change optical recording medium of claim 13, wherein the protective layer contains one or more carbides selected from the group consisting of carbides of silicon, titanium, tantalum, and niobium.

15. The phase-change optical recording medium of claim 14, wherein the recording layer comprises an alloy of germanium, antimony and tellurium, or a material containing the alloy as the main component.

16. The phase-change optical recording medium of claim 15, which is used under the conditions of $d/v < 1.5 \times 10^{-7}$ [s], wherein d is the laser beam diameter as measured on the recording layer ($d = \lambda/NA$, wherein λ is the wavelength of the laser light and NA is the numerical aperture of the objective lens) and v is the linear velocity.